

70 THE BASIC OPEN-HEARTH STEEL PROCESS

In the last column the volumes of free hydrogen are set out, which would result from the decomposition of the gases in question into 'their constituents.

As already mentioned, the composition of the distillation gases according to the species of fuel employed, as also the conditions by which the dry distillation is governed, can be very different. The composition of the distillation gases as they take place in the producer has moreover, as yet never been ascertained, and will perhaps never admit of being ascertained. Explanation of the question can only at the present time be obtained by means of observation of the gases which are produced under other, but similar circumstances, and as such, gases from coke ovens, are at disposal. A series of such is taken from the work of Ferdinand Fischer, in which HaS has been left out, and the remainder calculated in percentages.

All the foregoing gases are produced from mineral coal, and therefore the conclusions which are able to be drawn from the composition are only good for gases from producers which have been worked with similar fuels. This is, however, for the overwhelming majority the case; for review of the gases, which will be won from peat or wood, and in certain ovens, lignite, the distillation gases must naturally be based on these substances.

The table shows the following important peculiarities of distillation gases :—

That, of the volume, the overwhelming ingredient, of the gases is hydrogen, either in its free form or combined with carbon.

(2) That hydrogen carries off in the gases not inconsiderable quantities of carbon from the solid fuel.

(3) In the gases there are minute quantities of N.

(4) Similarly small amounts of oxygen combined with carbon go over into the gases. This points also to the so-called chemically-combined water taking an active part in the actions during gasification.

The composition of the gases fluctuates within wide limits, and it is apparent from the researches of Wright quoted that one and the same fuel is able to give off gases of quite different